

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 17.

September, 1915.

No. 201.

THE AMERICAN OSTRICH FERN.

M. L. FERNALD.

THE Ostrich Fern of eastern North America is commonly treated as identical with the Eurasian species; and, although long kept with *Onoclea* as *O. Struthiopteris* (L.) Hoffm., it is now recognized by the leading students of ferns as constituting, with a few other species, a distinct genus *Matteuccia* Todaro (1866). For a long time those who maintained the Ostrich Ferns as generically distinct from *Onoclea* placed them under *Struthiopteris* Willd. (1809) but the earlier valid use of the name *Struthiopteris* by Weiss in 1770 for the genus which has been generally called *Lomaria* Willd. (1809) necessitates the abandonment of the generic name *Struthiopteris* for our "Ostrich Ferns." The uniting of the American Ostrich Fern with the European under the names *Onoclea Struthiopteris* (L.) Hoffm., *Struthiopteris germanica* Willd. or *Matteuccia Struthiopteris* (L.) Todaro has of late been so general and so entirely unquestioned that one wonders whether European students of the ferns can have much familiarity with the American plants or American students with the European material.

By the older students of our flora the plants were not considered conspecific, while by some of a later generation they have been treated as varietally distinct. The first to distinguish the American plant was Michaux who, in 1803, described the American Ostrich Fern from material collected at Montreal as *Onoclea nodulosa*: "O. pinnis sessilibus, linearibus, pinnatifidis: fronde fertili pinnis quasi noduloso-articulatis; urceolis contiguis";¹ but most unfortunately Michaux appended to this very clear description the synonyms *Acrostichum*

¹ Michx. Fl. Bor. Am. ii. 272 (1803).

areolatum Linn. and *Osmunda caroliniana* Walt. and the "Hab. in Carolinae limosis umbrosis." The synonymy and locality belong, then, clearly to *Woodwardia areolata* (L.) Moore, the description and the type material to the Canadian *Matteuccia*. But in interpreting Michaux's species the important weight should naturally be given the description and the type-material rather than the cited synonyms and locality, which do not accord with the description or with the plant described, especially since the name of the plant described was not derived from either of the supposed synonyms. In 1809 Schkuhr¹ beautifully illustrated some of the differences between the American *Onoclea nodulosa* and the Old World *O. Struthiopteris*, and it has been customary to cite Schkuhr's *O. nodulosa* as different from that of Michaux which most students, following the synonymy rather than the description, have generally referred to *Woodwardia areolata*; but, as indicated above, Michaux's plant is identical with Schkuhr's. The fact that Michaux's type-material and the synonyms cited belonged to different plants was clearly recognized by Desvaux, who took up the Michaux plant as *Struthiopteris nodulosa*, based on "Onoclea nodulosa MICH., *Fl. Am. bor.*, 2, p. 272. *Excl. syn. SCHK., Fil. t. 104.*"²

In 1810, Willdenow, recognizing in the American plant a species distinct from his European *Struthiopteris germanica*, called it *S. pennsylvanica*,³ and under this name the American plant was maintained as a distinct species by Nuttall, Torrey (in his *Compendium*), and other early discriminating students of our flora. Subsequently, however, the American and the European plants have been generally treated as identical, though in 1862 Lowe treated the American plant as *Struthiopteris germanica*, var. *pennsylvanica*.⁴

A comparison of a series of European specimens with the American material indicates that the earlier students of our flora were apparently correct in their interpretation of the American and the European plants as distinct species. In *Matteuccia Struthiopteris* of Europe the fertile frond has subentire or merely undulate pinnae. These are well illustrated by Schkuhr (*Krypt. Gew. i. t. 105*), by Hooker & Bauer (*Gen. Fil. t. 69 A*), by Britten (*Eur. Ferns*), by Ettingshausen & Pokorny (*Physiotypia Pl. Austr. i. t. 14*), and by Thomé (*Fl. von*

¹ Schkuhr, *Krypt. Gew. i. 96, 97, tt. 104, 105* (1809).

² Desv. *Mém. Soc. Linn. Paris. vi. pt. 2. 287* (1827).

³ Willd. *Sp. v. 289* (1810).

⁴ Lowe, *Ferns, Brit. and Exot. ii. 138* (1862).

Deutschl. i. t. 24); and they are indicated by the phrase of Ledebour and of Koch: "pinnis linearibus integris."¹ In the American plant the fertile pinnae are commonly pinnatifid or, as originally expressed by Michaux, "quasi noduloso-articulatis." This character, well shown in fairly mature specimens, is also indicated in the illustrations in Schkuhr's *Kryptogamische Gewächse*, i. t. 104.

In all the European material examined the stipe (especially the base) of the fertile frond bears closely appressed firm lustrous blackish scales, and these scales are apparently found on the stipes of the sterile fronds as well. Such sterile fronds as the writer has seen have been cut above the base, but in his detailed account of the plant Mr. James Britten says: "The petiole is short, and is dilated at the base, where it joins the stem, and there covered with nearly black scales."² The writer has closely examined more than 100 numbers of the American plant, mostly showing the base of the stipe, and in no case has he been able to find any of the appressed black scales which characterize the base of the stipe in the European. He has also failed to find black scales on the fresh material. Instead the American plant has the base of the stipe covered with very thin membranous pale brown or cinnamon-colored scales.

The sterile frond of the European plant is broadly oblong to oblong-lanceolate and comparatively thin in texture; that of the American plant more elongate and of firmer texture, the margins of the pinnales often revolute. In the European the pinnae are nearly horizontal, in the American commonly more obliquely ascending; and the American plant is more erect and of greater stature than the European. Thus, Moore, describing the European plant, speaks of the sterile fronds as "reclining at an angle of about 50°,"³ and Britten speaks of them as "elegantly curved outwards,"⁴ and Moore recognized his *Struthiopteris germanica*, var. *pennsylvanica* because it "is more erect in habit." As to stature, Britten says of the sterile fronds of the European plant, "sometimes attaining a length of as much as five feet, though usually about three feet" and "the main pinnae are four or five inches long"; while Ascherson & Graebner, going into more detail, say that the frond is "up to 1.7 m. long" and that its stipe is "up to 12 cm.

¹ Ledeb. Fl. Ross. iv. 527 (1852-53); Koch, Fl. Germ. ed. 3, 739 (1857).

² Britten, Eur. Ferns, 2 (1881).

³ Moore, Ferns Brit. and Exot. ii. 138 (1862).

⁴ Britten, Eur. Ferns, 2 (1881).

long.”¹ In the American plant, on the other hand, fronds only 3 feet long would be considered small, those of 5 or 6 feet in length being common, while luxuriant fronds are said to exceed 10 feet (3 m.). The pinnae of the American plant vary, according to luxuriance, from 2–7 inches (5–18 cm.) in length, and the stipe of the sterile frond from $2\frac{3}{4}$ –14 inches (7–35.5 cm.) in length.

Departing from the European *Matteuccia Struthiopteris* in nearly all details and quite isolated from it, the North American plant seems to be, as treated by the earlier students of our flora, a distinct American species which should be called

MATTEUCCIA nodulosa (Michx.), n. comb. *Onoclea nodulosa* Michx. Fl. Bor. Am. ii. 272 (1803) as to description and type-specimen, not as to synonyms and habitat; Schkuhr, Krypt. Gew. i. 96, t. 104 (1809). *Struthiopteris pensylvanica* Willd. Sp. v. 289 (1810). *S. nodulosa* Desv. Mém. Soc. Linn. Paris, vi. pt. 2, 287 (1827). *S. germanica*, var. *pensylvanica* Lowe, Ferns, Brit. and Exot. ii. 138 (1862).

GRAY HERBARIUM.

THE HEMLOCK SPRUCE.

OLIVER A. FARWELL.

IN RHODORA for March, 1915, Mr. Alfred Rehder published a criticism of my paper on “the correct name of the Hemlock Spruce” which appeared in the issue of the Bulletin of the Torrey Botanical Club for December, 1914. I shall not attempt to answer the salient points of his discussion in the order in which they are given but will take analogous but non-contiguous features, and bring them together in order to show as clearly as possible the inconsistencies and fallacies of his statements and conclusions.

In dealing with specific names and the species which they represent two axioms are in general use. The first is that any species which has had the type specifically mentioned or designated by the author stands or falls with that type; the author’s specific name cannot be transferred to another plant. The other is that where the type has

¹ Asch. & Graebn. Syn. i. 43 (1896).